

# Accuracy Characteristics for ZDV Risk Reduction Nominal Scenario, Hours 1558-2059

## 1 Introduction

This document contains scenario characteristics for hours 1558 to 2059 (actual recorded data 15:58:12 to 20:59:02) GMT recorded on December 11, 2002 at Denver ARTCC (ZDV). Characteristics provided are general statistics determined from the scenario on general air traffic activity and aircraft and air carrier characteristics. Definitions for these scenario characteristics are provided in Reference[1].

## 2 Air Traffic Distributions

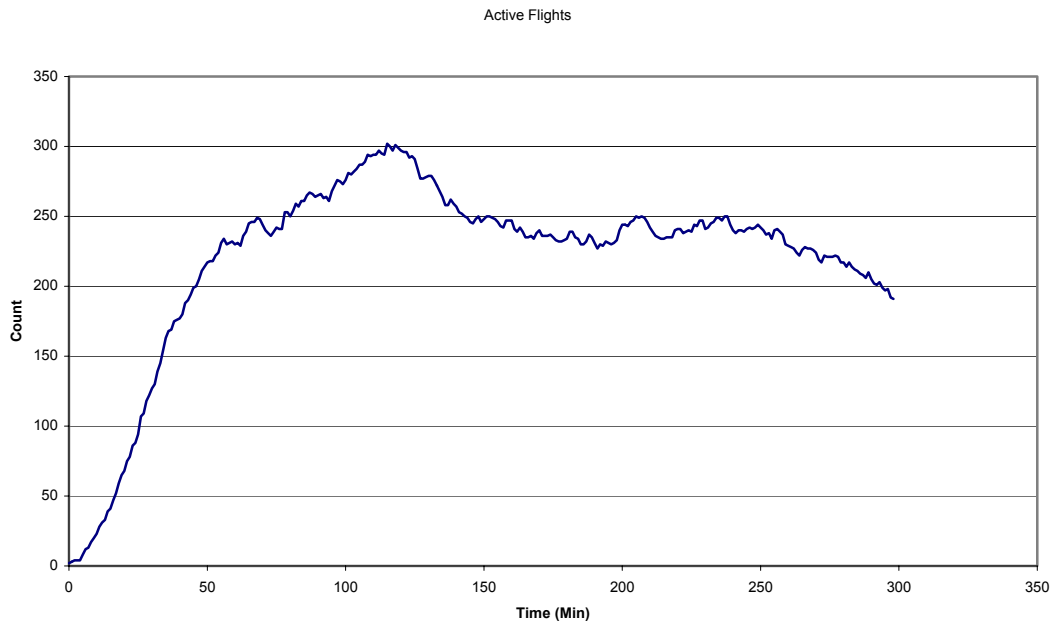
This section provides metrics that characterize the air traffic. The metrics are flight density partitioned by standard flight levels, flight type and sector penetration, statistics on the number of active flights, ground speed statistics, counts of interim altitude and amendment messages, and air traffic maneuvers by altitude and phase of flight. This section corresponds to Section 3.3 of Reference[1].

### 2.1 Active Flights

This section corresponds to section 3.3.2 of Reference[1].

**Table 1: Statistics on Active Flights per Minute Increment**

Count Average	Standard Deviation	Maximum Count	Minimum Count
220.542	65.139	302	2



**Figure 1: Count of Active Flights per Minute Increment**

## 2.2 Flight Type and Sector Penetration

This section corresponds to Section 3.3.3 of Reference[1].

**Table 2: Statistics on Sector Time, Center Time and Sector Penetration by Flight Type**

Metric	Arrivals	Departures	Internals	Overflights	All Flights
Average Number of Sectors Penetrated	2.649	2.676	2.016	3.778	3.076
Average Time in Center (sec)	1933.822	1803.408	1543.071	2741.894	2200.81
Average Time in Sector (sec)	723.717	667.693	763.945	719.465	709.601
Percentage by Flight Type	0.2	0.276	0.098	0.423	1

## 2.3 Interim Altitude Messages

This section corresponds to Section 3.3.6 of Reference[1].

**Table 3: Statistics on Interim Altitude Messages <sup>1</sup>**

Flight Count	Average	Standard Deviation	Maximum Count	Minimum Count
933	2.637	0.874	6	1

## 2.4 Amendment Messages

This section corresponds to Section 3.3.7 of Reference[1]

**Table 4: Statistics on Amendment Messages per Flight<sup>2</sup>**

Flight Count	Average	Standard Deviation	Maximum Count	Minimum Count
609	2.023	1.073	7	1

---

<sup>1</sup> Statistics on flights with interim altitude messages only

<sup>2</sup> Statistics on flights with flight plan amendments only

## 2.5 Air Traffic Maneuvers

This section corresponds to Section 3.3.8 of Reference[1]. Detailed statistics on air traffic maneuvers are provided in Appendix C.

**Table 5: Total Track Report Maneuver Count by Vertical and Horizontal Phase of Flight**

Vertical Phase	Horizontal Phase of Flight		Total
	STR	TURN	
ASC	6397	924	7321
DES	6402	1311	7713
LEV	2781	1400	4181
Total	15580	3635	19215

**Table 6: Percent breakdown of Flight Tracks by Vertical and Horizontal Phase**

Vertical Phase	Horizontal Phase of Flight		Margin (%)
	STR (%)	TURN (%)	
ASC	33.292	4.809	38.100
DES	33.318	6.823	40.141
LEV	14.473	7.286	21.759
Margin (%)	81.082	18.918	100.000

## 3 Aircraft Distributions

This sections provides the metrics used to characterize the aircraft provided in the scenario. The selected metrics are aircraft type, model, navigational equipment, and the air carriers operating in the airspace. The section corresponds to Section 3.4 of Reference[1].

### 3.1 Aircraft Type

This section corresponds to Section 3.4.1 of Reference[1].

**Table 7: Count by Aircraft Type**

Aircraft Type	Count	Percentage of Total
J	1065	80.499
T	49	3.704
P	184	13.908
Unknown	25	1.890
Total	1323	100.000

### 3.2 Aircraft Models

This section corresponds to Section 3.4.2 of Reference[1].

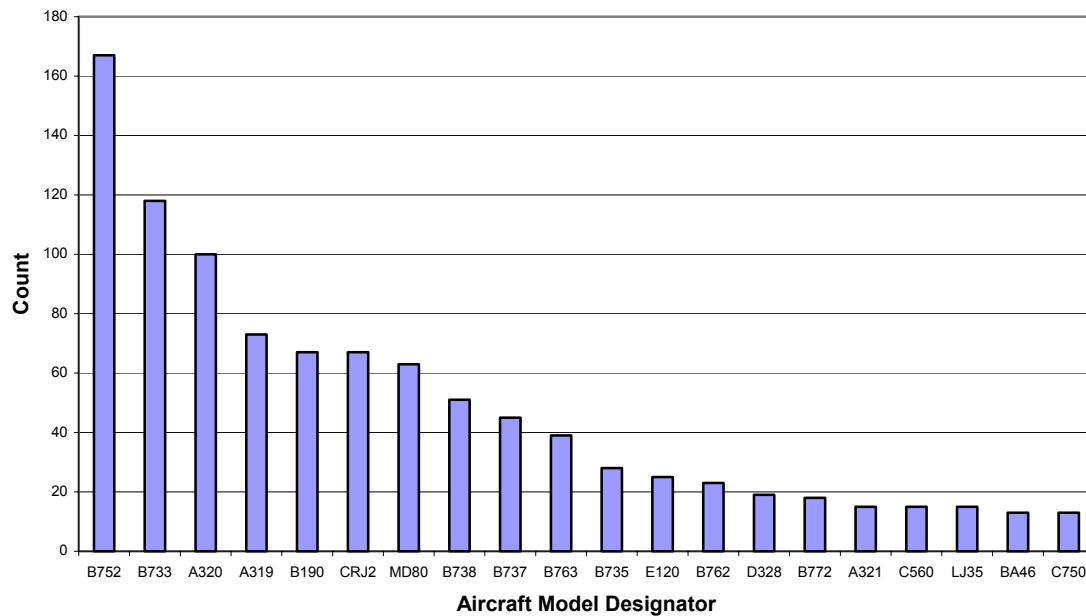


Figure 2: Count of Top Twenty Aircraft Models

### 3.3 Navigational Equipage

This section corresponds to Section 3.4.3 of Reference[1].

Table 8: Count by Aircraft Navigational Equipage Type

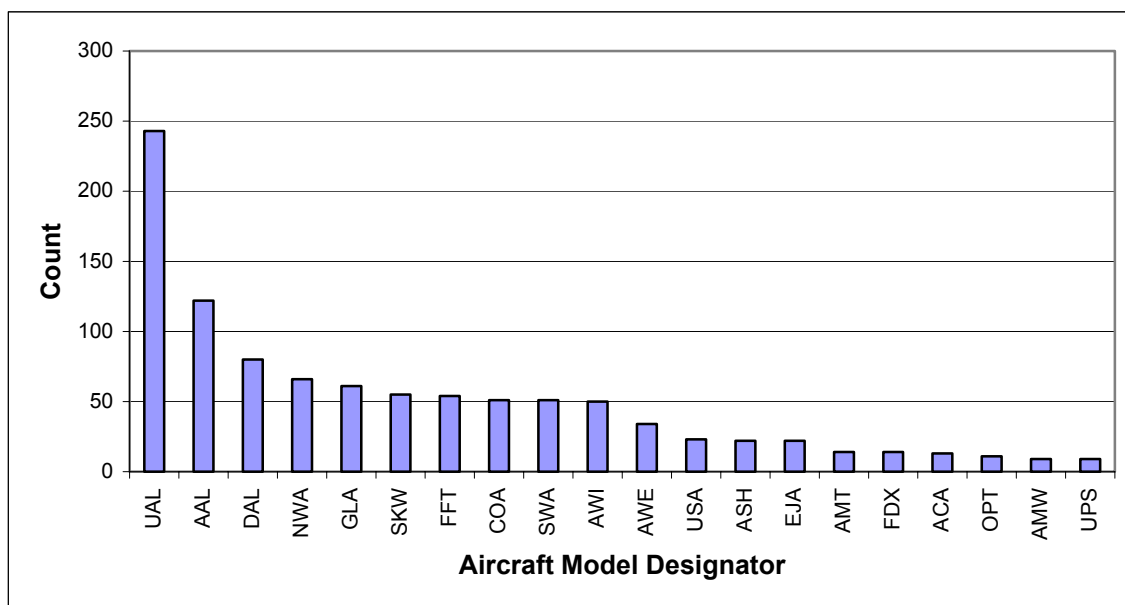
Nav. Equip. Designator	Count	Percentage of total
G	408	30.290
E	260	19.302
F	212	15.739
I	158	11.730
A	135	10.022
R	128	9.503
Q	20	1.485
W	19	1.411
P	2	0.148
Unknown	5	0.371
Total	1347	100.000

### 3.4 Carrier Distribution

This section corresponds to Section 3.4.4 of Reference[1].

**Table 9: Count by Carrier Type**

Category	Count	Percentage of Total
Commercial	1087	80.698
General Aviation	188	13.957
Other <sup>3</sup>	72	5.345
Total	1347	100.000



**Figure 3: Count by Top Twenty Air Carriers**

## 4 Reference

[1] Paglione, M., Oaks, R., Ryan, Dr. H., Summerill, J.S., (Final, January 2000), "Description of Accuracy Scenarios for the Acceptance Testing of the User Request Evaluation Tool (URET) / Core Capability Limited Deployment (CCLD)," FAA William J. Hughes Technical Center / ACT-250, Atlantic City, New Jersey.

<sup>3</sup> Includes military and aircraft with unrecognized designators.